

REMARKS/ARGUMENTS

I. Specification

In the subject Office Action, uses of reference numbers 42 and 44 for power and ground connectors in various places were objected to by the Examiner. In response, the paragraph 0011 of the Specification has been amended to recite reference numbers 40 and 42 for the power and ground connectors. Accordingly, withdraw of the objections is respectfully requested.

II. Claim Objections

In the subject Office Action, the Examiner objected to "the distance" not having antecedent basis in claims 6 and 11. Applicants have amended these claims to recite "a distance" instead.

III. Claim Rejections under 35 U.S.C. §102(b) Rejections

In the subject Office Action, claims 1-3 and 6-8 were rejected under 35 U.S.C. §102(b) as being anticipated by Kucharek et al ("Kucharek"). In response, Applicants have amended the claims. It is well settled that §102 rejections require the prior art reference to anticipate each and every required elements of the invention being claimed.

A. No teaching of a socket for mounting an IC package in Kucharek

Kucharek discloses an integrated circuit (IC) package (semiconductor chip module 10) with an embedded chip 38. Applicant respectfully submits that the chip 38 is not an IC package as the Examiner concluded, but that the semiconductor chip module 10 of Kucharek is the IC package. First, the chip 38 is embedded in a non-removable manner in the semiconductor chip module 10 of Kuchaek. Second, the semiconductor chip module 10 has a plurality of pins 18 for mounting it to a printed circuit board (see column 3, lines 51-54). Third, those of ordinary skill in the art would recognize that the pins 18 (no IC package land pads) insure that the semiconductor chip module 10 will be soldered directly to the PCB, without the use of an interposed

socket between the IC package and the PCB. The socket allows for a non-soldered connection of the IC package and for the IC package to be removable.

Hence, Kucharek does not disclose a socket with biased contacts for mounting an IC package to the PCB. This LGA socket, as claimed by Applicants, has biased contacts which elastically deform upon engagement of the land pads of the IC package, allowing the IC package to be electrically coupled without soldering. In this manner, the use of the socket allows for IC package of Applicants' invention to be removed and replaced without unsoldering connections.

Applicants have amended independent claims 1 and 6 to recite that the biased mating contacts engage the IC package, so as to clarify that there is a socket being claimed for electrically engaging the IC package without solder. Accordingly, Applicants submit semiconductor chip module 10 of Kucharek fails to anticipate the claimed socket for electrically connecting the IC package to the PCB. Independent claims 1 and 6 clearly recite a socket with biased contacts for engaging the IC package.

B. No teaching of a power and a ground connector which are mirror images of each other.

In Figures 14A and 14B of Kucharek, the power connector (power lead 116) and the ground connector (ground lead 124) are shown side-by-side in flatten condition where they are mirror images of each other, but this is before they are mounted on their respective power bus bar 42 and ground bus bar 44. Figures 11 and 12 of Kucharek show that the adjacent pairs of power and ground leads 116 and 124, once mounted on their respective power bars, are not disposed and configured to be mirror images of each other. This is due to the narrow end portions 119, 120 of the ground lead 116 being on the opposite sides of the enlarged center portions 118, 126 relative to the narrow end portions 127, 128 of the power lead 124 once assembled. As described in Applicants' application, "The symmetrical pairs of power and ground connectors 40 and 42 result in reduced common mode noise".

Independent claim 1 is amended above to recite the mirror image relationship, previously found in cancelled claims 2 and 3. Therefore, both of the independent claims 1 and 6 (also independent claim 11 discussed below) clearly recite that the

power and ground connectors are mirror images of each other. Claim 4 has been amended to be dependent from claim 1.

C. Additional recitations added in the dependent claims to emphasize the mirror image relationship between the power and ground connectors.

To emphasis the mirror image relationship between the power and ground connectors, dependent claims 4 and 9 (also dependent claim 16) have been amended to recite that the:

“...first arcuate arm portion extending outwardly in a first direction from a first center of one end of the first broadside portionand wherein the ground connector further includes a second arcuate arm extending outwardly in a second direction from a second center of one end of the second broadside portion...”

This is in contrast to the offset relationship between the narrow end portions of the power and ground leads of Kucharek, best illustrated in Figure 11.

Moreover, to emphasis the mirror image relationship between the power and ground connectors, dependent claims 5 and 10 (also dependent claim 17) have been amended to recite that the:

“...a first bracket portion extending outwardly in the first direction from a first side of the first broadside portionand wherein the ground connector further includes a second bracket portion extending outwardly in the second direction from a second side of the second broadside portion...., the first side and the second side being adjacent to each other.”

Again, this is in contrast to the offset relationship between the narrow end portions of the power and ground leads of Kucharek.

IV. Claim Rejections under 35 U.S.C. §103 Rejections

In the subject Office Action, claims 4-5 and 9-17 were rejected under 35 U.S.C. §103 as being obvious in view of Kucharck and Szu combined. Dependent claims 4-5 are dependent from independent claim 1 and incorporate its limitations. Dependent claims 7-10 are dependent from independent claim 6 and incorporate its limitations.

Therefore, for at least the same reasons as presented above for independent claims 1 and 6, these claims are patentable over Kurcharek. Additional reasons are provided below.

Independent claim 11 is rejected by the Examiner under 35 U.S.C. §103, instead of 35 U.S.C. §102(b), due to the added system limitations.

A. No teaching of a power and a ground connector which are mirror images of each other.

With respect to independent claim 11, Szu, like Kurcharek, does not teach the above-described power and a ground connector which are mirror images of each other. As shown in Figure 2 of Szu, all the connectors have the same configuration and same alignment. Thus, Szu does not cure the deficiencies of Kucharch.

As described above, dependent claims 16 and 17, which are dependent from claim 11, have been amended to emphasize the mirror image relationship of the first and second arcuate arms and the first and second bracket portions.

B. No teaching or suggestion to combine references due to no disclosure of at least one pair of power and ground connectors in Szu.

The Szu does teach a socket ("electrical connector") with connectors ("a number of contacts") for connecting a chip package with land pads to a PCB. However, there is no teaching of at least one pair of power and ground connectors having broadside portions disposed in an adjacent, spaced-apart, and substantially parallel relationship. In fact, there is no teaching of pairs of power and ground terminals at all of any type, configuration or disposition. Therefore, there is no teaching or suggestion in the Szu to one skilled in the art to combine the socket of Szu with the power and ground leads of Kurcharek.

C. Additional Arguments with respect to dependent claims 4-5, 9-10, and 16-17

Dependent claims 4, 9 and 16 are dependent, directly or indirectly, from independent claims 1, 6 and 11 respectively. Dependent claims 4, 9, and 16 recite a pair of accurate arm portions with soldering contacts of the pair of power and ground

connectors "extending outward" from their respective broadside portions. The broadside portions are used for mounting the connectors to the frame. Dependent claims 5, 10, 17 recite a pair of bracket portions with the biased contacts of the pair of power and ground connectors "extending outward" from their respective broadside portions. As recited in the application: "By having the two arcuate arm portions 52 and 54 extend outwardly from the geometric plane in opposite directions and the two bracket portions 56 and 58 extending outwardly from the geometric plane in opposite directions, such directions being substantially perpendicular to the geometric plane, the distance between the two broadside portions 44 and 46 may be reduced."

To the contrary, as shown in Figures 10, 11, 12, 13A, and 13B of Kucharek, the narrow end portions 119, 120 of the ground lead 116 and the narrow end portions 127, 128 of the power lead 124 bend inward toward their respective frames (bus bars) to which they are "fixed". As recited in column 8, beginning at line 34, of Kucharek, the narrow end portions are "bent approximately 90 degrees so that the round tip... lies flush on top of a resilient bump..." Hence, the narrow end portions are described as being bent over their associated bars to make electrical contact with the bumps and are not described as being bent over for the purpose of allowing the ground leads and power leads to be closer to each other. There are no correspondingly located bus and ground bars in Applicants' application.

Further, while for prosecution expedience, Applicants addressed the fact that Szu does not remedy the deficiencies of Kucharck above, Applicants' response is not to be construed as Applicants' agreement that Szu is an eligible prior art, which was filed less than one year prior to the filing of the subject application. Applicants hereby explicitly reserve the right to address the issue, should that become relevant.


V. Conclusion

In view of the foregoing, Applicants submit claims 1-2 and 4-17 are in condition of allowance. Early issuance of Notice of Allowance is respectfully requested.

The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 500393.

Respectfully submitted,
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